

Client's ref.: TSMC2003-1006/PE:DCLin
Our ref.: 0503-A30092-USf/Jonah/Steve/Nelson

What Is Claimed Is:

1 1. A system of automated sorter operation for held or
2 banked wafer lots, comprising:
3 a storage device capable of storing a plurality of process
4 records, each process record corresponding to a wafer
5 lot and comprising an identity and a current status
6 indicating if the wafer lot is on hold, in a
7 production or in a non-production bank; and
8 a sorting module receiving a wafer lot identity, acquiring
9 the current status corresponding to the wafer lot
10 identity from the process record, issuing a first
11 status setting instruction corresponding to the
12 current status to a manufacturing execution system
13 (MES) to release the wafer lot, issuing a flow
14 instruction with sorting recipes directing the MES
15 to perform a sorter operation, and issuing a second
16 status setting instruction corresponding to the
17 current status to the MES to hold or bank the wafer
18 lot.

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1 2. The system of claim 1 wherein the sorting module
2 stores the current status into a temporary file or table, issues
3 the second status setting instruction corresponding to the
4 current status in the temporary file or table, and removes the
5 temporary file or table after the sorter operation.

1 3. The system of claim 1 wherein the wafer lot identity
2 is input by an operator or a computer system.

1 4. The system of claim 1 wherein the MES releases or
2 holds/banks the wafer lot based on the first status setting
3 instruction or the second status setting instruction
4 respectively.

1 5. The system of claim 1 further comprising a wafer
2 sorter performing sorter operations according to sorting
3 recipes.

1 6. The system of claim 5 further comprising a transport
2 system transporting the wafer lot to the wafer sorter.

1 7. The system of claim 6 wherein the MES applies a tool
2 dispatch rule to determine the wafer sorter starts the transport

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3 system and the wafer sorter to perform the sorter operation using
4 automated instructions.

1 8. The system of claim 1 wherein the sorter operation is
2 slot mapping, carrier exchange, wafer lot combination or splits.

1 9. A method of automated sorter operation for held or
2 banked wafer lots, the method comprising using a computer to
3 perform the steps of:

4 receiving a wafer lot identity;

5 acquiring the current status corresponding to the wafer lot
6 identity from a process record, wherein the process
7 record corresponding to a wafer lot comprises the
8 identity and the current status indicating if the
9 wafer lot is on hold, in a production or in a
10 non-production bank;

11 issuing a first status setting instruction corresponding
12 to the current status to a manufacturing execution
13 system (MES) to release the wafer lot;

14 issuing a flow instruction with sorting recipes to direct
15 the MES to perform a sorter operation; and

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16 issuing a second status setting instruction corresponding
17 to the current status to the MES to hold or bank the
18 wafer lot.

1 10. The method as claimed in Claim 9 further comprising
2 the steps of:
3 storing the current status into a temporary file or table;
4 issuing the second status setting instruction
5 corresponding to the current status in the temporary
6 file or table; and
7 removing the temporary file or table.

1 11. The method as claimed in Claim 9 wherein the wafer lot
2 identity is input by an operator or a computer system.

1 12. The method of claim 9 further comprising the steps of:
2 releasing the wafer lot based on the first status setting
3 instruction by the MES; and
4 holding or banking the wafer lot based on the second status
5 setting instruction by the MES.

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1 13. The method of claim 9 further comprising a step of
2 performing the sorter operation according to sorting recipes by
3 the wafer sorter.

1 14. The method of claim 13 further comprising a step of
2 transporting the wafer lot to the wafer sorter by the transport
3 system.

1 15. The method of claim 14 further comprising the steps
2 of:

3 applying a tool dispatch rule to determine the wafer sorter
4 by the MES for the given wafer lot;
5 starting the transport system to transport the wafer lot
6 to the wafer sorter by the MES using automated
7 instructions; and
8 starting the wafer sorter to perform the sorter operation
9 by the MES using automated instructions.

1 16. The method of claim 9 wherein the sorter operation is
2 slot mapping, carrier exchange, wafer lot combination or splits.

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3 17. A storage medium for storing a computer program which
4 when executed performs a method of automated sorter operation
5 for held or banked wafer lots, the method comprising the steps
6 of:
7 receiving a wafer lot identity;
8 acquiring the current status corresponding to the wafer lot
9 identity from a process record, wherein the process
10 record corresponding to a wafer lot comprises the
11 identity and the current status indicating if the
12 wafer lot is on hold, in a production or in a
13 non-production bank;
14 issuing a first status setting instruction corresponding
15 to the current status to a manufacturing execution
16 system (MES) to release the wafer lot;
17 issuing a flow instruction with sorting recipes to direct
18 the MES to perform a sorter operation; and
19 issuing a second status setting instruction corresponding
20 to the current status to the MES to hold or bank the
21 wafer lot.

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1 18. The storage medium of claim 17, wherein the method
2 further comprises the steps of:
3 storing the current status into a temporary file or table;
4 issuing the second status setting instruction
5 corresponding to the current status in the temporary
6 file or table; and
7 removing the temporary file or table.

1 19. The storage medium of claim 17 wherein the wafer lot
2 identity is input by an operator or a computer system.

1 20. The storage medium of claim 17 further comprising the
2 steps of:
3 releasing the wafer lot based on the first status setting
4 instruction by the MES; and
5 holding or banking the wafer lot based on the second status
6 setting instruction by the MES.

1 21. The storage medium of claim 17, wherein the method
2 further comprises a step of performing the sorter operation
3 according to sorting recipes by the wafer sorter.

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1 22. The storage medium of claim 21, wherein the method
2 further comprises a step of transporting the wafer lot to the
3 wafer sorter by the transport system.

1 23. The storage medium of claim 22, wherein the method
2 further comprises the steps of:
3 applying a tool dispatch rule to determine the wafer sorter
4 for the given wafer lot by the MES;
5 starting the transport system to transport the wafer lot
6 to the wafer sorter by the MES using automated
7 instructions; and
8 starting the wafer sorter to perform the sorter operation
9 by the MES using automated instructions.

1 24. The storage medium of claim 17 wherein the sorter
2 operation is slot mapping, carrier exchange, wafer lot
3 combination or splits.